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Aoleaby B1A8S10P-HC

JK Smart BMS B1A8S10P / B1A8S10P-HC User Manual

Model: B1A8S10P-HC | Brand: Aoleaby

1. Introduction

This manual provides essential information for the safe and effective use of your Aoleaby JK Smart BMS (Battery Management System) B1A8S10P and B1A8S10P-HC models. This advanced BMS is designed to protect and optimize the performance of 4S to 8S LiFePO4, Li-ion, and LTO battery packs, featuring active balancing, comprehensive protection functions, and Bluetooth communication for real-time monitoring via a dedicated mobile application.

2. Safety Information

WARNING: Improper installation or use can lead to serious injury, fire, or damage to the battery and BMS. Always follow these safety guidelines.

- **Read Entire Manual:** Before installation or operation, thoroughly read and understand all instructions in this manual.
- **Qualified Personnel:** Installation and wiring should only be performed by qualified personnel with experience in battery systems and electronics.
- **Correct Polarity:** Always ensure correct polarity when connecting the BMS to the battery pack. Reverse polarity will cause irreversible damage.
- **Insulation:** Ensure all connections are properly insulated to prevent short circuits.
- **Ventilation:** Operate the battery system in a well-ventilated area.
- **Emergency Procedures:** Familiarize yourself with emergency shutdown procedures for your battery system.
- **Avoid Water:** Do not expose the BMS to water or excessive moisture.

3. Product Overview

The JK Smart BMS is a sophisticated battery management system designed for optimal battery performance and longevity. Key features include:

- **Active Balance:** Actively balances voltage differences between battery cells, improving efficiency and extending battery life.
- **Comprehensive Protection:** Protects against over-charge, over-discharge, over-current, short circuit, and low-temperature charging cutoff.
- **Bluetooth Communication:** Connects to a dedicated mobile application for real-time status monitoring and settings adjustments.
- **Wide Compatibility:** Supports 4S to 8S configurations for LiFePO4, Li-ion, and LTO battery types.
- **CANBUS & Heat Function (HC models):** B1A8S10P-HC models include CANBUS communication and a heat function interface for cold weather operation.



Figure 3.1: Front view of the JK Smart BMS. The QR code on the label can be scanned to download the mobile application and access further instructions. Scan for APP & Manual

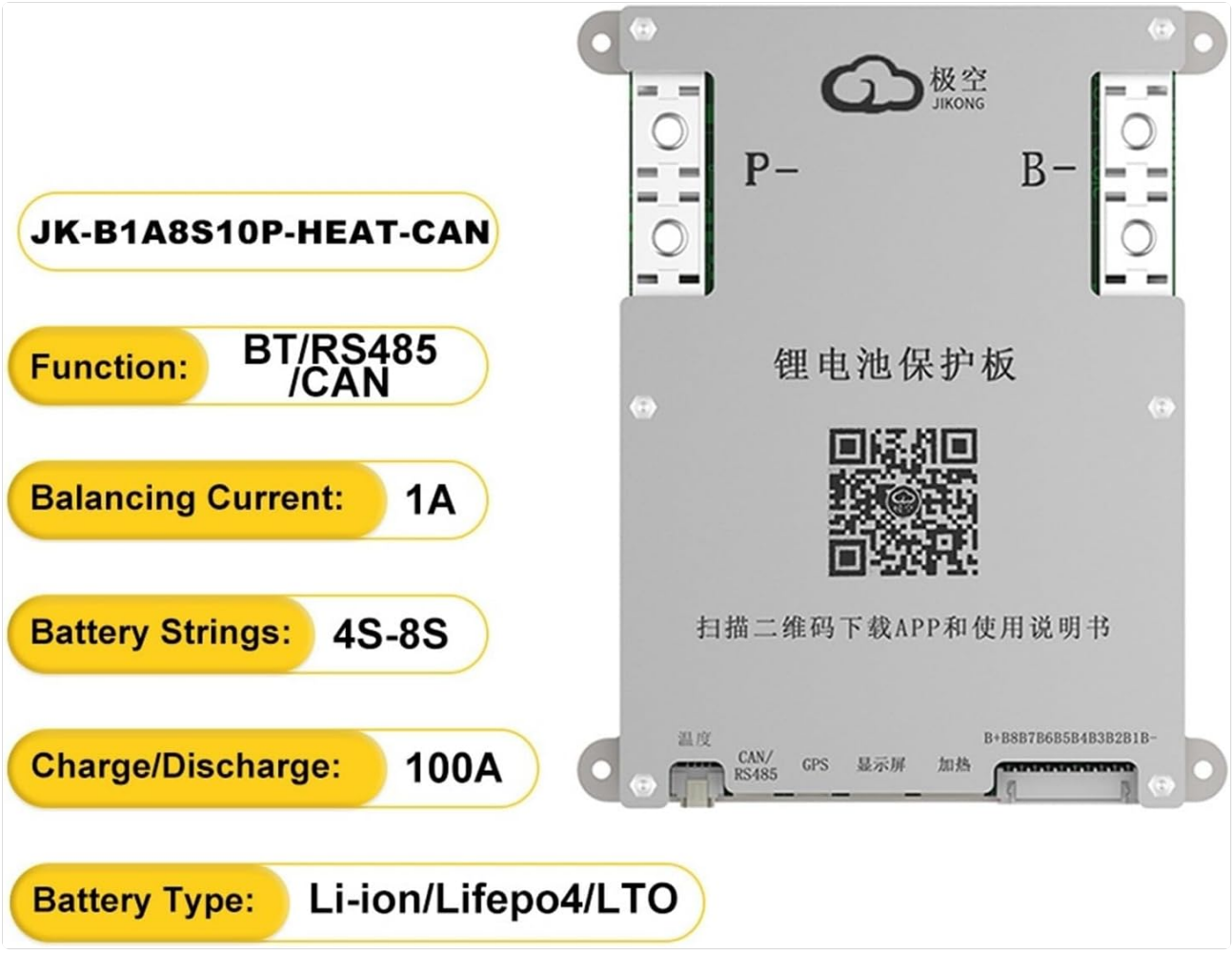

Figure 3.2: Key specifications of the JK Smart BMS, including BT/RS485/CAN communication, 1A balancing current, 4S-8S battery string support, 100A charge/discharge current, and compatibility with Li-ion/LiFePO4/LTO battery types. Scan for APP & Manual

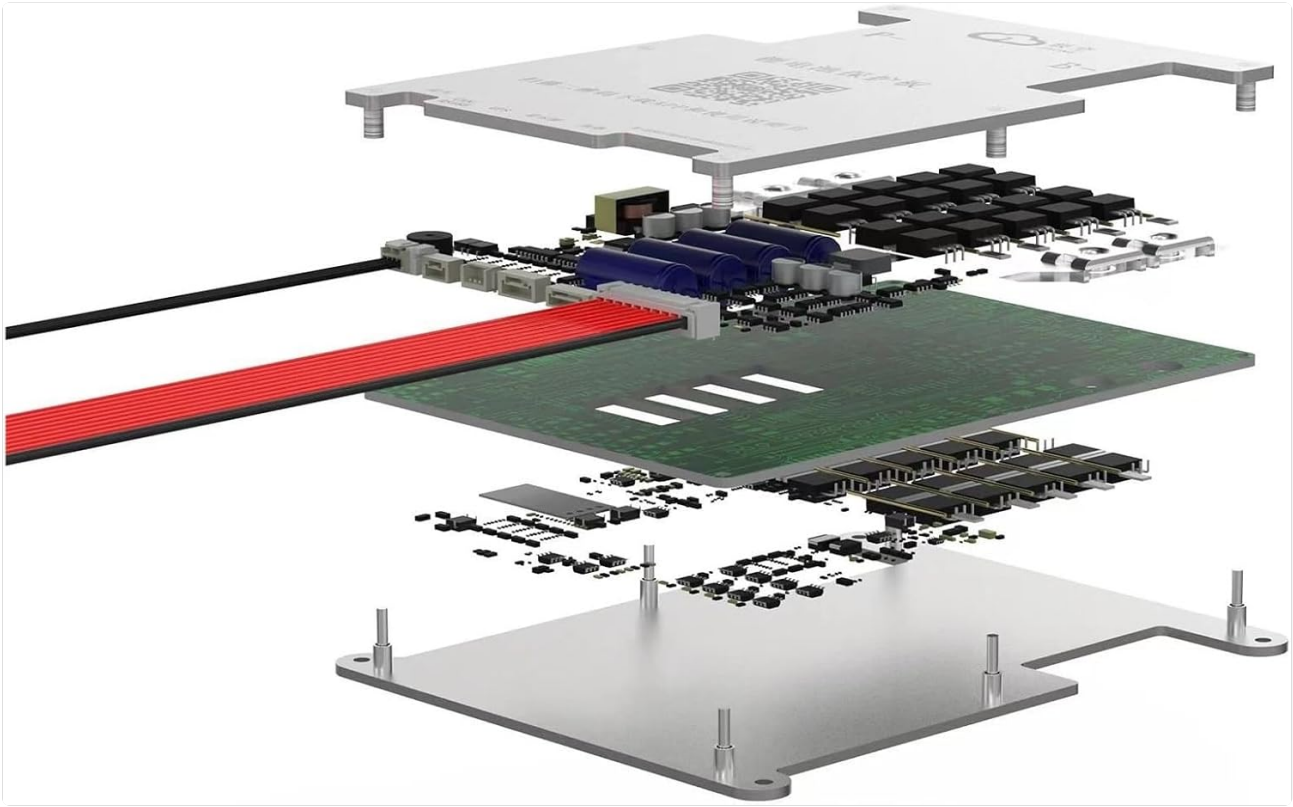

Figure 3.3: Exploded view illustrating the internal components and layered structure of the JK Smart BMS.



Figure 3.4: The JK Smart BMS package contents, typically including the BMS unit, temperature sensor, balance wires, active switch, and heating cable (for models with heat function). Scan for APP & Manual

4. Setup and Installation

Careful wiring is crucial for the proper function and safety of your BMS. Refer to the wiring diagram provided with your product for precise connections.

4.1. Pre-installation Checks

1. Verify that your battery pack voltage and cell count (4S-8S) match the specifications of your BMS model.
2. Ensure all battery cells are balanced to a similar voltage before connecting the BMS.
3. Gather all necessary tools: multimeter, wire strippers, crimpers, heat shrink tubing, safety glasses, and insulated gloves.

4.2. Wiring Instructions

General Wiring Order:

1. **B- (Negative Terminal):** Connect the main negative terminal of the battery pack to the B- port on the BMS.
2. **Balance Wires:** Connect the balance wires (75cm included) from each cell tap of your battery pack to the

corresponding balance port on the BMS. Ensure the order is correct (B0, B1, B2, etc.).

3. **P- (Load/Charge Negative):** Connect the negative terminal for your load and charger to the P- port on the BMS.
4. **Temperature Sensor:** Connect the temperature sensor (40cm included) to the designated port on the BMS and place the sensor on a battery cell for accurate temperature monitoring.
5. **Active Switch:** Connect the active switch (15cm included) to its dedicated port. This switch can be used to activate/deactivate the BMS.
6. **Heating Cable (B1A8S10P-HC only):** For models with the heat function, connect the green 5PIN cable of the heating cable to the heating pad. The black and red cables should be linked to the smart charger. The BMS will detect battery temperature and automatically manage charging status via the smart charger.

Important: Double-check all connections for correct polarity and secure fit before applying power.

4.3. Mobile Application Setup

The JK Smart BMS features Bluetooth connectivity for monitoring and configuration via a mobile application.

1. **Download App:** Scan the QR code on the BMS unit or in Figure 3.1/3.2/3.4 to download the official JK BMS mobile application.
2. **Install App:** Follow the on-screen instructions to install the application on your smartphone.
3. **Connect:** Open the app, enable Bluetooth on your phone, and search for the BMS device. Select your BMS from the list to connect.

5. Operating the BMS

Once installed and connected, the JK Smart BMS operates automatically to protect your battery. The mobile application provides detailed insights and control.

5.1. Real-time Monitoring

Through the mobile application, you can monitor various parameters in real-time:

- Overall battery voltage
- Individual cell voltages
- Charge/discharge current
- Battery temperature
- State of Charge (SOC)
- Balance status
- Protection status (e.g., over-voltage, under-voltage, over-current warnings)

5.2. Active Balancing

The BMS continuously monitors cell voltages and activates its 1A active balancing function to equalize cell voltages, ensuring all cells are charged and discharged uniformly. This process is automatic and helps maximize battery capacity and lifespan.

5.3. Protection Functions

The BMS will automatically trigger protection mechanisms under abnormal conditions:

- **Over-charge Protection:** Disconnects charging when any cell voltage exceeds the set limit.
- **Over-discharge Protection:** Disconnects load when any cell voltage drops below the set limit.
- **Over-current Protection:** Disconnects load/charge when current exceeds safe limits.
- **Short Circuit Protection:** Immediately disconnects in case of a short circuit.
- **Low Temperature Charging Cutoff:** Prevents charging when battery temperature is too low, protecting cells from damage.

When a protection event occurs, the BMS will typically disconnect the relevant circuit. The mobile app will display the active protection status. Most protections will automatically reset once conditions return to normal.

6. Maintenance

The JK Smart BMS is designed for low maintenance. However, periodic checks can ensure optimal performance and longevity.

- **Visual Inspection:** Periodically inspect all wiring and connections for signs of wear, corrosion, or looseness. Ensure all connections are secure.
- **Cleanliness:** Keep the BMS and surrounding area clean and free of dust or debris. Do not use liquid cleaners directly on the BMS.
- **Temperature:** Ensure the BMS operates within its specified temperature range. Adequate ventilation is important.
- **Firmware Updates:** Check the mobile application or manufacturer's website for any available firmware updates for your BMS. Follow instructions carefully if updating.

7. Troubleshooting

This section addresses common issues you might encounter with your JK Smart BMS.

Problem	Possible Cause	Solution
BMS not powering on / No output	Incorrect wiring; Blown fuse; Battery voltage too low; BMS in protection mode.	Check all wiring connections and polarity. Verify battery voltage. Check for active protection in the app. Reset BMS if necessary (e.g., by disconnecting and reconnecting main battery negative).
Cells not balancing	Balance wires incorrectly connected; Significant cell voltage difference; BMS not active.	Verify balance wire connections. Ensure BMS is active. For very large voltage differences, pre-balance cells manually before relying on BMS.
Bluetooth connection issues	Bluetooth off on phone; App permissions; Interference; BMS not active.	Ensure phone Bluetooth is on. Grant necessary app permissions. Move closer to the BMS. Restart app/phone.

Problem	Possible Cause	Solution
BMS frequently enters protection mode	Over-current/voltage/temperature; Faulty cell; Incorrect settings.	Check current draw, voltage, and temperature readings in the app. Inspect individual cell voltages for anomalies. Review BMS settings in the app to ensure they match your battery specifications.

If you encounter issues not listed here or cannot resolve a problem, please contact Aoleaby customer support or your seller for assistance.

8. Specifications

Feature	Specification
Model	B1A8S10P / B1A8S10P-HC
Supported Battery Types	LiFePO4, Li-ion, LTO
Cell Configuration	4S, 5S, 6S, 7S, 8S
Active Balance Current	1A
Continuous Charge/Discharge Current	100A (Refer to specific model for max current)
Communication	Bluetooth (BT), RS485, CANBUS (HC models only)
Protection Functions	Over-charge, Over-discharge, Over-current, Short Circuit, Low Temperature Charging Cutoff
Dimensions (Approx.)	1.18 x 0.79 x 0.39 inches (Package Dimensions)
Weight (Approx.)	2.2 pounds
Manufacturer	Aoleaby

9. Warranty and Support

For warranty information and customer support, please refer to the documentation included with your purchase or visit the official Aoleaby website. You may also contact the seller, HANLing Technology Company, for assistance regarding your product.
Please retain your proof of purchase for any warranty claims.

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